Pratt & Whitney

GO BEYOND

SPECIAL INSTRUCTION NO. 255F-21A **February 15, 2022**

PW4000-112 AIR/OIL HEAT EXCHANGER SPECIAL INSPECTION

APPLICATION:

All PW4000-112 Engines until further notice from Pratt & Whitney Customer Technical Services.

All Air/Oil Heat Exchanger P/Ns 15622-000, 17622-000 for use on PW4000-112 engines excluding new/newly overhauled units.

THE REASON FOR THIS SPECIAL INSTRUCTION:

This Special Instruction introduces a one-time inspection of the Engine Air/Oil Heat Exchanger (AOHX) for leakage.

APPROVAL:

The part number changes and/or part changes specified in this Special Instruction obey the applicable Federal Aviation Regulations and are FAA-Approved for the engine model(s) given.

DESCRIPTION:

A proactive inspection is introduced in response to two recent occurrences of Air/Oil Heat Exchanger leakage post extended aircraft storage. Oil leakage can result in low oil pressure and potential In-flight Shutdown.

The cause of the recent issues of oil leakage from AOHX are under investigation. AOHXs have previously experienced leaks in-service due to corrosion. Long term storage may be a contributing factor.

COMPLIANCE CATEGORY:

Category 3

For engines not in-service that need to conduct ferry flights

Accomplish a one-time inspection 30 days or fewer before an initial ferry flight and any subsequent ferry flight that will occur more than 60 days after a previous ferry flight.

For engines returning to revenue service

Accomplish a one-time inspection within 30 or fewer days before return to revenue service.

NOTE: An AOHX already inspected within 30 days prior to actual return to service would not require an additional inspection. For example, AOHX inspected for a ferry flight then return to service also scheduled for less than 30 days since inspection.

REFERENCES:

AIRCRAFT MAINTENANCE MANUAL B777 (PW4000 SERIES ENGINES)

COMPONENT MAINTENANCE MANUAL 79-21-20

NECESSARY TOOLS:

See reference Component Maintenance Manual 79-21-20

ACCOMPLISHMENT INSTRUCTIONS:

1. Remove the Air/Oil Heat Exchanger from the engine per Aircraft Maintenance Manual (AMM) - TASK 79-21-08-000-801-N00 Engine Air/Oil Heat Exchanger/Valve Removal.
2. Replace removed unit with new or newly-overhauled unit OR perform the steps below for the one-time inspection.
3. Perform Leakage Test per CMM 79-21-20 - TESTING AND FAULT ISOLATION section C: Leakage Test.

(CMM test procedure text provided below for reference only)

CAUTION: Use only clean potable water when conducting leakage test.

a. *Attach air inlet tube to the INLET port of the Air/Oil Heat Exchanger and plug the oil OUTLET port. Use fixture T15622-007 or equivalent.*

b. *Connect leakage test setup as shown in Figure 1. Check tightness of all clamps and fittings.*

c. *Immerse unit under water and slowly pressurize oil INLET port with gaseous nitrogen (consumable item no P05-068) or dry, filtered compressed air.*

d. *Slowly increase pressure to 535 +10/-0 psig (3688.70 +68.95/-0 kPa) and hold pressure for a period of two (2) minutes. During two (2) minute period, heat exchanger must not show any signs of leakage.*

e. *After two (2) minute period, reduce pressure to zero. Disconnect test setup and remove heat exchanger.*

f. *Inspect heat exchanger. Unit must not show any signs of failure such as permanent distortion, stress fractures, or cracks.*

g. *Replace the heat exchanger if it fails leakage test or if signs of permanent distortion, stress fractures, or cracks are present.*

h. *Dry unit in hot air oven at 160°F (71.11°C) maximum. Remove the heat exchanger hanger after 10 minutes or as soon as it is dry, whichever comes first.*

4. If unit passed leak test, then the unit is acceptable for reinstallation.
    a. Reinstall Air/Oil Heat Exchanger on engine per AMM - TASK 79-21-08-000-801-N00 Engine Air/Oil Heat Exchanger/Valve Installation.
    b. Per AMM ref TASK, after IDLE Power Test pay special attention to inspect for oil leakage from the AOHX.
        i. Examine the engine for leaks.
        ii. If you find leaks, repair the leaks as necessary After the leaks are repaired, do the steps above to operate the engine again and examine the engine for leaks.
5. Report testing results to your local Pratt & Whitney Field Service Representative
    a. Reporting results should include:
        i. AOHX Part Number
        ii. AOHX Serial Number
        iii. Test result (Pass or Fail)
        iv. If available, last known storage condition
            1. Examples include
                a. On-engine (engine run every 7 days)
                b. Preserved on-engine (AMM Method 1 or 2)
                c. Stored per CMM 79-21-20
6. If the unit passes and the operator does not plan to install on engine and fly within 30 days of test the unit can be stored in accordance with the storage method in ref CMM 79-21-20. See ref CMM for full instructions, a summary of them is below for reference.
    a. Cap inlet and outlet ports
    b. Place unit in waterproof packing bag
    c. Place waterproof packing bag in vapor barrier bag along with desiccant and heat seal bag.
    d. Place vapor barrier bag in fiberboard box containing 1 – 2 in layer of polyethylene packing material
    e. Seal package with metal closures

    NOTE: Exposure to an uncontrolled (humid) environment for extended periods will lead to corrosion on the AOHX which can lead to leaks developing.

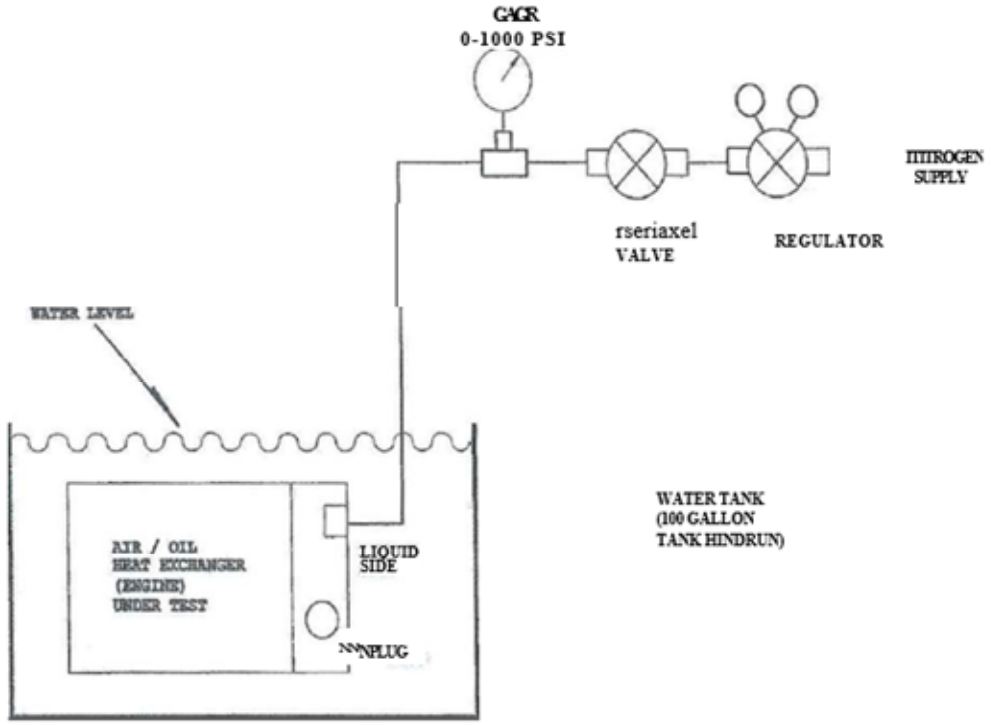

Figure 1: Air/Oil Heat Exchanger Leakage Test Schematic